

ABSTRACT OF THE DISCLOSURE

A plasma etching apparatus and method are provided to obtain an accurate dimension after trimming based on an amount of roughness of a mask edge or an amount of radicals in plasma. A wafer on the surface of which a desirably patterned mask for etching is formed is processed in a plasma etching process chamber and the mask is trim-treated by plasma etching so as to reduce the patterned mask width. The apparatus includes a plasma monitor for measuring an amount of radicals in the plasma process chamber, and a trimming condition calculator for calculating a time required for the trimming to obtain a desired mask width, based on a pre-measured width dimension of the patterned mask and a pre-measured amount of roughness of a mask edge and the radical amount measured by the plasma monitor. The trimming is performed for the time calculated by the trimming condition calculator.